APPENDIX II

INFORMATION SOURCES
Q-1 - Q-15
REQ. NO. 0-9074

APPENDIX II PART 1
CONTRACTOR:
ONTARIO RESEARCH FOUNDATION
360 pp

Q-1

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Canada Department of Energy, Mines & Resources
Address CANMET, P.O. Box 100, Elliot Lake P5A 2J6
Telephone No. (705) 848-2236
Name of Interviewee Mr. Geof Knight
Position Research Scientist on Dust

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
   Chrysotile
   Amosite
   Crocidolite
   Anthophylite
   Tremolite
   Actinolite

   Research on asbestos measurement only

   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

Methods are under development for counting fibres generally.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 100 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 0 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? __--__%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

3.1.2.1 What modifications have you made in these procedures?

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes x No ____

If yes, please describe.

An electrical alignment instrument is under development.

An X-ray method is being developed requiring aligned fibres in the sample.

See Section 3.2.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No _____

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ___ No ___

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: ___

3.1.4.2 Dollar Value: ___

3.1.4.3 What is the source of funds for this work?

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? ___ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

All research.

Yes x. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

See 3.2.1.3.

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

- An instrument is under development for the measurement of fibres by electrical alignment.
- An X-ray method is under development requiring the alignment of airborne fibres during collection. The method shows promise if a method of alignment can be developed.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 2 man-years

3.2.2.2 Dollar Value: --

3.2.2.3 What is the source of funds for this work?

Federal Government

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No __x__

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes __x__ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

The electrical alignment instrument under development is based on Dr. Vernon Timbrell's work in Britain.

An information exchange is being carried on through the Technical Co-operation Group of the EEC.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

- Gravimetric dust sampling in hard-rock mines with quartz analysis.

The work included development of method and instrumentation.

3.2.5.2 On test procedures?

See 3.2.5.1.

3.2.5.3 On instrumentation?

See 3.2.5.1.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

15 years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

- A study of fibres in Canadian Mines.
- Continuing with mine sampling systems and programs.
- Dust sources and dust control.

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No x Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research?

_____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

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4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

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Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________________________

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4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ____________________

4.2.7.2 On test procedure? ____________________

4.2.7.3 On instrumentation? ____________________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO __x__

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Lists have been submitted to Ontario Research Foundation via Mr. George Riley of CANMET.

8. What areas of research do you think deserve further work?

- Biological effects related to fibre morphology.

- A study of the occurrence of fibres in mineral deposits now being worked.

Interviewer: W.D. Brown Date: December 12, 1980

Q-2

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Environment Canada
Address
Telephone No. (613) 997-3405
Name of Interviewee W.A. Lemmon
Position Chief, Mining, Mineral and Metallurgical Directorate

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
   - Chrysotile x
   - Amosite
   - Crocidolite
   - Anthophylite
   - Tremolite
   - Actinolite

   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes _x_ What percentage of your work is measurement or identification in air as opposed to other media? _100_%.

3.1 What percentage of your work in air measurements is service work as opposed to research? _75_%

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? _0_%

The service work is neither workplace or ambient. Rather, it is 100% stack sampling.

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 25 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

None from workplace

Only stack sampling

Use our own procedure (see below)

3.1.2.1 What modifications have you made in these procedures?

Stack Samples:
Sampling: 3 modifications of Environment Canada's particulate sampling method.

Analytical: a modification of the NIOSH method - major changes are in filters and counting procedure: full 100 fields are counted.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No __x__

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No __x__

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _x_ No ____

If yes, what sort of information and from whom?

Through NIOSH, ASTM, OAMA

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _x_ No ____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

Through the UN organization on a limited basis;
With ASTM.
With government agencies and departments and through the EEC indirectly.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

Stack sampling only

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

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3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

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3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/~~Day~~ Year: perhaps 200 in Ottawa
" 200 in Montreal

3.1.4.2 ~~Dollar Value~~:) " . 20 in Halifax

3.1.4.3 What is the source of funds for this work?

Federal Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 2 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

To continue as we are doing;

We intend to bring out new regulation for asbestos manufacturing industry.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes _x_. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

- Use of Electron microscopy
- Fibre definition associated with ASTM task group.
- Evaluation and assessment of new analytical equipment.

3.2.1.2 On test procedures?

see above

3.2.1.3 On instrumentation?

see above

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 ~~Man-hours/week~~: 1 man-month/year

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

Federal Government

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No __x__

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes __x__ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

Through the UN, EPA, ASTM and indirectly through EEC, as described in 3.1.2.5.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

Development of the Environment Canada Method

3.2.5.2 On test procedures?

Development of the Environment Canada Method

3.2.5.3 On instrumentation?

None

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

7 years

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

To continue with present program.

3.2.7.1 On sampling?

as above

3.2.7.2 On test procedure?

as above

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No _____ Jump to Section 5.

Yes __x__ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research?

_0__%. Research only

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

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4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

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4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

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4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes _x_ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling?

Nothing at present

4.2.1.2 On test procedures?

Nothing at present

4.2.1.3 On instrumentation?

Nothing at present

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week: Nothing at present

4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No __x__

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No __x__

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

Have sponsored some work at Ontario Research from time to time.

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

Have contracted out any such work, mainly to Ontario Research.

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling?

None

4.2.7.2 On test procedure?

None

4.2.7.3 On instrumentation?

None

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO __x__

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Ontario Research

McGill University

Ministry of Environment Ontario

" " " B.C

" " " Quebec

8. What areas of research do you think deserve further work?

1. An automatic instrument for gravimetric measurement of fibres.

2. A method of identifiying asbestos fibres as opposed to asbestiform or non-asbestos fibres.

Interviewer: W.D. Brown

Date: November 13, 1980

Q-3

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Environment Canada
Address River Road Laboratories, Ottawa K1A 1C8
Telephone No. (613) 998-8719
Name of Interviewee Mr. R.B. McCaig
Position Head, Source Monitoring Section
Surveillance Division

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x From mining and milling only.
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

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(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

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3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.
Yes _x_ What percentage of your work is measurement or identification in air as opposed to other media? _100_%.

3.1 What percentage of your work on air measurements is service work as opposed to research? ___0_%

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? ______%

We have done only source sampling e.g. bag house air, stack emmissions from dryers, sampling on drill rigs in open air pit mining. This was part of a regulation and method development program.
See Research Section 3.2.

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

3.1.2.1 What modifications have you made in these procedures?

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes _____ No _____

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No _____

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

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3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

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3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

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3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: ________________

3.1.4.2 Dollar Value: ________________

3.1.4.3 What is the source of funds for this work?

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3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? ____ years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes x. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

There is nothing underway on this subject at present.

See past research work, Section 3.2.5.

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

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3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

Source emission samples were gathered as part of regulation and analytical method development programs.

3.2.5.2 On test procedures?

We developed "Standard Reference Methods for Source Testing: Measurement of Emissions of Asbestos from Asbestos Mining & Milling Operations" (Regulations, Codes and Protocols Report EPSI-AP75-1) and "Method S-3 Sampling of Drill Baghouse Exhaust Emissions", Regulations Codes and Protocols Report EPS 1-AP-75-1A, 1978). We also trained regional personnel in counting techniques according to the methods and did round robin counting in conjunction with QAMA.

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

For about three years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

None is planned. Future work will be done as requested within the department.

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No _x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ______________________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No _x_

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes _____ NO __x__

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

McGill University

8. What areas of research do you think deserve further work?

Do not know of any at present.

Interviewer: W.D. Brown Date: November 27/80

Q-4

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company: Health and Welfare Canada
Address: Health Protection Branch, Environmental Health Directorate
Telephone No. (613) 992-1388
Name of Interviewee: Mr. J.C. Meranger
Position: Head, Inorganic Chemistry Section

1. Is work being done there on fibre measurement or identification?
   No ___ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ___
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite x
      Crocidolite x
      Anthophylite x
      Tremolite x
      Actinolite x
   2.2 Other fibres? Yes x No ___

2.2.1 If yes, what kinds of fibres?

glass, talc

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 50 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 10 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 10 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 60 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH 2

3.1.2.1 What modifications have you made in these procedures?

None

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes x No ____
See Below

If yes, please describe.

Contract underway with Ontario Research Foundation for development of magnetic alignment - light scattering technique and use of SEM for automated counting and identification.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No x

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _x_ No _____

If yes, what sort of information and from whom?

Direct contact between Department and EPA, and the Canadian Asbestos Committee Experts Group within the International Standards Organization (Mr. Meranger is a member of the Experts Group).

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

With EEC through ISO and OECD.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

NIOSH optical method and TEM.

3.1.3.1 What modifications have you made in these procedures?

None.

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No _x_
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No __x__.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes __x__ No ____

If yes, what sort of information and from whom?

Same as 3.1.2.4.

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes x No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

Same as 3.1.2.5.

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: Impossible to estimate.

3.1.4.2 Dollar Value: ____________

3.1.4.3 What is the source of funds for this work?

Federal Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 10-15 years.

3.2.1.2 On test procedures?

We have tried to compare results with other laboratories (round robin).

3.2.1.3 On instrumentation?

Nothing.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 : 1.25 man-years/year

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

Federal Government

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No x

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes x No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

Involved with organizations as under 3.1.2.4 and 3.1.2.5.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

Co-relation between fibre counting by optical and X-ray diffraction.

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

10 - 15 years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

Will be looking at problem areas such as asbestos substitutes.

3.2.7.1 On sampling?

None.

3.2.7.2 On test procedure?

Contracted out to Ontario Research Foundation for development of rapid screening method.

3.2.7.3 On instrumentation?

As in 3.2.7.2.

4. Are you measuring or identifying asbestos fibres in water?

No x Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

____

____

____

____

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

____

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____

____

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? __________________________

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4.2.1.2 On test procedures? ______________________

4.2.1.3 On instrumentation? ______________________

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

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4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?____________________________

4.2.5.2 On test procedures? ____________________________

4.2.5.3 On instrumentation? ____________________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?______________________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling?

4.2.7.2 On test procedure?

4.2.7.3 On instrumentation?

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No _x___

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO ____

If yes, on what materials and under what circumstances?

Insulation and other building materials, etc. See 6.1.

6.1 What procedures do you use?

- Contracted out to Ontario Research Foundation.

It included ambient air measurements following installation of fibres.

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

McGill

Sherbrooke

QAMA - Georges Dahmen

- M. Cossette

8. What areas of research do you think deserve further work?

- Development of reliable rapid screening technique
- Relationship between physiological effect and fibre morphology, surface chemistry, etc.

Interviewer: W.D. Brown

Date: December 2, 1980

Q-5

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company HEALTH AND WELFARE CANADA, OTTAWA.
Address Medical Services Branch: Occupational Health Unit
Telephone No. (613) 996-4921
Name of Interviewee MR. A. N. Patrick
Position Senior Industrial Hygiene Engineer
(Dr. T.F. McCarthy is Director)

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes X Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
   Chrysotile x
   Amosite x
   Crocidolite x
   Anthophylite
   Tremolite
   Actinolite
   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

All are counted as total fibres.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 100%.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

Sampling: NIOSH - with their own modifications

Test procedure: NIOSH 2

Instrumentation: Zeiss optical phase contrast 403X with objective at 10X

3.1.2.1 What modifications have you made in these procedures?

None

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes ____ No x

If yes, please describe.

3.1.2.3 Have you imported any ~~new~~ specialty instruments or attachments for use on air from the work place? Yes____ No x

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes __x__ No _____

If yes, what sort of information and from whom?

Members AIHA and ACGIH:

large amounts of information through literature and conferences.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes __x__ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

On PAT program of NIOSH

Seeking accreditization with AIHA.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

No work on asbestos in ambient air

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4. How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: 1000/year

3.1.4.2 Dollar Value: ____

3.1.4.3 What is the source of funds for this work?

Annual public service budget

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 2 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

40% increase expected in 1981

20% increase expected in 1982

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

no research

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling?

4.2.7.2 On test procedure?

4.2.7.3 On instrumentation?

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO

If yes, on what materials and under what circumstances?

Sprayed-on insulation and similar products.

6.1 What procedures do you use?

Infra-red and x-ray diffraction

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Labour Alberta

B.C. Compensation Board

Health Protection Branch ?

8. What areas of research do you think deserve further work?

(1) Would like a permanent program for comparing counting results between labs.

(2) Simple field method for identification of fibre types.

Interviewer: W.D. Brown

Date: November 11, 1980

Q-6

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Technical Services Div.; Occupational Safety & Health Br.,
Address Labour Canada; Ottawa K1A 0J3
Telephone No. (613) 997-3104
Name of Interviewee Mr. A. Pighin, P. Eng.
Position Industrial Hygiene Engineer

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite x
      Crocidolite x
      Anthophylite x
      Tremolite x
      Actinolite x
   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

glass and textiles

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? >90 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 66 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH2 principally

3.1.2.1 What modifications have you made in these procedures?

None.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No _x___

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes ____ No _x__

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes x No ____

If yes, what sort of information and from whom?

Keeping informed through Government Committees and conferences.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes x No ____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

NIOSH proficiency analytical testing program (PAT).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

No ambient air testing.

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/ Year: 140

3.1.4.2 Dollar Value: --

3.1.4.3 What is the source of funds for this work?

Federal Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 3 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Continue in present manner.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

No research.

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

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4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

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Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ______________________________________

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4.2.1.2 On test procedures? ____________________

4.2.1.3 On instrumentation? ____________________

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

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4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO _____

If yes, on what materials and under what circumstances?

Bulk samples are mandatory prior to air sampling to determine whether any asbestos fibres are present in the structure of a building.

6.1 What procedures do you use?

IR Spectroscopy: Perkin-Elmer Method

6.1.1 What modifications have you made in these procedures?

Use Perkin Elmer Method, following it closely.

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Health & Welfare Canada: Medical Services Group

Health & Welfare Canada: Dr. Peter Toft (613) 992-0891

8. What areas of research do you think deserve further work?

(1) Chemical spot test for asbestos which would stain asbestos fibres only, so that they can be distinguished and counted separately from other fibres under the microscope.

(2) Co-relation is needed between optical counting methods and EM method.

(3) Inexpensive qualitative test for the six types of asbestos is needed.

Interviewer: W.D. Brown Date: 12/11/80

Q-7

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company B.C. Energy Mines & Petroleum Resources
Address Mines Inspection Branch
Telephone No. (604) 254-7171
Name of Interviewee Mr. Sam Elias
Position Senior Inspector, Environmental Control

1. Is work being done there on fibre measurement or identification?
    No _____ Terminate interview.
    Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
    2.1 Asbestos? Yes x No ____
    2.1.1 If yes, what kinds of asbestos?
        Chrysotile x
        Amosite
        Crocidolite
        Anthophylite
        Tremolite
        Actinolite
    2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

Glass fibre insulation.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 100 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 85 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 15 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

Gavimetric & optical particle count.

3.1.2.1 What modifications have you made in these procedures?

None.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes ____ No _x_

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

We are looking at VC25 from Germany (a gravimetric sampler).

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes x No ____

If yes, what sort of information and from whom?

Germany, South Africa, Australia and Britain

Germany: Looking at Tyndaliscope and VC 25.

South Africa: Looking at their particle count procedure.

Australia: Looking at their particle count procedure, gravimetric method and radon daughter method.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes ____ No x.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

Not on a regular basis, only sporadically.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

No ambient air analysis.

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples 12,000/Year

3.1.4.2 Dollar Value: ________

3.1.4.3 What is the source of funds for this work?

Provincial Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 42 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

To improve methods as technology advances.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes x . Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

- Attempting to co-relate fibre count and silica particle count with asbestosis rate and silicosis rate.

3.2.1.2 On test procedures?

None

3.2.1.3 On instrumentation?

None

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 2 man-months/year

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

B.C. Government

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes ____ No x

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes x No ____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

- Keeping up with the literature.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

Have looked at new instruments to improve counting techniques.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

In a small way for 28 years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

Nothing specific.

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No _x___ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

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4.1.1.1 What modifications have you made in these procedures?

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4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No _______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes _______ No _______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling? ______________________________

4.2.5.2 On test procedures? ______________________________

4.2.5.3 On instrumentation? ______________________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water? ______________________________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO _____

If yes, on what materials and under what circumstances?

Silica analysis of heads and respirable dust.

6.1 What procedures do you use?

Wet method for silica and spectrographic analysis.

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Quebec and Ontario Governments

8. What areas of research do you think deserve further work?

- Development of easier and more accurate methods of fibre sampling and analysis.

Interviewer: W.D. Brown Date: December 2/80

Q-8

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Workers' Compensation Board of British Columbia
Address
Telephone No. (604) 266-0211, Ext. 450
Name of Interviewee Phyllis Stoddart
Position Laboratory Manager

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite x
      Crocidolite x
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

glass, talc.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 90%.

3.1 What percentage of your work on air measurements is service work as opposed to research? 70 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 50 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

Workers' Compensation Board Industrial Hygiene Laboratory
Analytical Method No. 0200,
November 27, 1978: "Asbestos Fibres in Air"

3.1.2.1 What modifications have you made in these procedures?

None.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes ____ No x

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes ____ No x

If yes, please describe.

Future: Will be obtaining a new microscope for dipsersion staining.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes __x__ No ____

If yes, what sort of information and from whom?

Through NIOSH and the literature.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes __x__ No ____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

Through the industrial hygiene associations and manufacturers of instruments.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

We do not do any testing of ambient air.

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples 300 per year

3.1.4.2 Dollar Value: ____________

3.1.4.3 What is the source of funds for this work?

W.C.B. - Funded through the employers of the province.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 10 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

(1) To develop methods to distinquish various forms of asbestos, using X-ray diffractometer and dispersion staining.

(2) Change over to AIA method.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No ____. Please explain.

Yes x. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?
Work on (1) and (2) in Section 3.1.6.

3.2.1.2 On test procedures?

Work on (1) and (2) above, Under 3.1.6.

3.2.1.3 On instrumentation?

Work on (1) and (2) above, under 3.1.6.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: --

3.2.2.2 Dollar Value: --

3.2.2.3 What is the source of funds for this work?

Worker's Compensation Board

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _x__

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _x_ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

Some information exchanges with people from U.S. and Britain.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

None.

3.2.5.2 On test procedures?

Developed WCB method.

3.2.5.3 On instrumentation?

None.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

At least 10 years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

As previously discussed under 3.1.6:

Develop methods to distinquish various forms of asbestos using X-ray diffraction and dispersion staining.

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

As above.

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No ___x___ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ________________________________

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4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

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4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

____

____

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____

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ______________________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No __x__

If yes, on what samples and under what circumstances?

______

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO ____

If yes, on what materials and under what circumstances?

Bulk: insulation and other building materials, brake linings, etc.

6.1 What procedures do you use?

IR, Atomic Absorption, ICP unit.

6.1.1 What modifications have you made in these procedures?

None.

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Geology Faculty at UBC

Cassiar Asbestos

Commercial Labs in B.C.

8. What areas of research do you think deserve further work?

Answered by
Alan Brofe
of B.C.-W.C.B.

- Identification of fibres directly on filter papers by dispersion staining instead of dissolving the filter and centrifuging.
- An automatic method of counting.
- Use of a standard method of counting internationally.

Interviewer: W.D. Brown Date: 7/11/80

Q-9

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Cassiar Asbestos Corporation Ltd.
Address Cassiar, B.C. VOC 1E0
Telephone No. (604) 778-7435
Name of Interviewee Melvin Taylor
Position Chief Engineer, Environment and Quality Control

1. Is work being done there on fibre measurement or identification?
   No _____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes ____ No x

2.2.1 If yes, what kinds of fibres?

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 100 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 75 %.
(see below)

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

1. Walk-through sampling: Sampler on the Hgyienist for about 15 minutes.
This is done every two months. 50%

2. Personnel 25%

3. Static 25%

Modified NIOSH 1: method established in 1970.

3.1.2.1 What modifications have you made in these procedures?

Does not know how it differs from NIOSH 1.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes x No ____

If yes, please describe.

In future a digital readout will be used with the fibrous aerosol monitor in the baghouse.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes x No ____

If yes, please describe.

Fibrous aerosol monitor has been in use since 1978. This will be used with a digital readout in the baghouse in future.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes x No ____

If yes, what sort of information and from whom?

Only from QAMA and literature.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes x No ____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

In 1978 discussions were held with James Hardy Co. in Australia for use of their method.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

Do sampling on the townsite (around shopping centre and residential areas etc.) , as follows:

Total dustfall using
High volume samplers;
Fibre count on membrane filter
running for 4 hours. NIOSH counting method is used.

3.1.3.1 What modifications have you made in these procedures?

None

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No x.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No x

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No x

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: 5 - 50

3.1.4.2 Dollar Value: ____

3.1.4.3 What is the source of funds for this work?

The Company

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 26 years.

midget impinger since 1954
cellulose filter since 1970

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Expect to change over to AIA for counting and gravimetric method for total dust.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

no research

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: _______

3.2.2.2 Dollar Value: _______

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

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3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No _____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No _____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

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4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

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Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ________________________

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4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling?

4.2.7.2 On test procedure?

4.2.7.3 On instrumentation?

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes ______ NO x

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

People who attended the McGill counting trials.

B.C. Dept. of Mines.

8. What areas of research do you think deserve further work?

1. Development of automatic fibre counting instrument for air.

2. Method of determining whether the fibres being counted are actually asbestos.

Interviewer: W.D. Brown Date: November 7, 1980

Q-1C

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Alberta Workers Health Safety & Compensation
Address Division of Occupational Health & Safety, Laboratory Services Branch
Telephone No. (403) 427-7989
Name of Interviewee Larry Serbin
Position Laboratory Scientist

(Director: Ian Drummond - Lab Services)

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite x
      Crocidolite x
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

glass fibres

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 5 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

Work places = brake shops; sites where transit is cut;
schools where insulation is being removed.

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 50%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH 2 at present; will be going over to AIA Method in one or two months.

3.1.2.1 What modifications have you made in these procedures?

NIOSH2 - Some changes were made in counting criteria following the counting trials at McGill.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No __x__

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No __x__

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes __x__ No _____

If yes, what sort of information and from whom?

Only through foreign literature; also, attended NIOSH course.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No __x__.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

No testing of ambient air.

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

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3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

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3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Year: 100

3.1.4.2 Dollar Value: ____

3.1.4.3 What is the source of funds for this work?

Provincial funds

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 6 - 7 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Plan to convert to AIA Method and try out fibrous aerosol monitor based on magnetic principle. The monitor was described in the AIHA Journal of several months ago.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

No research done.

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

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3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No _____ Jump to Section 5.

Yes __x__ What percentage of your work is measurement or identification in water as opposed to other media? __<1__ %.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

____

____

____

____

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

____

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____

____

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____________________________________

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4.2.1.2 On test procedures? ____________________

4.2.1.3 On instrumentation? ____________________

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

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4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling? ________________________

4.2.5.2 On test procedures? ________________________

4.2.5.3 On instrumentation? ________________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water? ________________________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ____________________

4.2.7.2 On test procedure? ____________________

4.2.7.3 On instrumentation? ____________________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO

If yes, on what materials and under what circumstances?

Insulation, ceiling tile, settle dust from factories and warehouses and water pipe.

6.1 What procedures do you use?

- Optical microscope with polarized light and optical staining.

- Occasionally IR and X-ray diffraction

6.1.1 What modifications have you made in these procedures?

None.

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Only those attending McGill counting trials.

8. What areas of research do you think deserve further work?

1. A simple, inexpensive method of identifying fibres in air.

2. Co-relation between optical counting method and the FAM.

3. Development of an automatic size classifier.

Interviewer: W.D. Brown Date: 6/11/80

Q-11

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Saskatchewan Labour, Occupational Health and Safety Branch
Address 1150 Rose Street, Regina, Sask. S4P 3V7
Telephone No. (306) 565-4505
Name of Interviewee G. Scattergood
Position Occupational Hygienist

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?

Chrysotile	×
Amosite	×
Crocidolite	×
Anthophylite	
Tremolite	×
Actinolite	

   2.2 Other fibres? Yes × No ____

2.2.1 If yes, what kinds of fibres?

glass , talc

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 30 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 5 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH

3.1.2.1 What modifications have you made in these procedures?

The conditions under which testing is required are assessed and appropriate modifications are made to the basic technique.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes ____ No __x__

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No __x__

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes x No ____

If yes, what sort of information and from whom?

Instrumentation for automatic counting - however, this is not needed because the number of samples is low.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes ____ No x.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

None done on ambient air.

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/~~Day:~~ Month: 5

3.1.4.2 Dollar Value: ____

3.1.4.3 What is the source of funds for this work?

Provincial Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 9 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

To continue in present manner as demand continues.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No x. Please explain.

No research

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

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3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ______________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ______________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?__________________________________

4.2.5.2 On test procedures? ____________________________

4.2.5.3 On instrumentation? ____________________________

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?____________________

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ____________________

4.2.7.2 On test procedure? ____________________

4.2.7.3 On instrumentation? ____________________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO ____

If yes, on what materials and under what circumstances?

Bulk - mainly insulation materials and other building materials from schools.

6.1 What procedures do you use?

Optical microscopy and IR.

6.1.1 What modifications have you made in these procedures?

IR has a set procedure.

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Provincial hygiene units

McMaster University

Saskatchewan Research Council (Ken Yoshida)

8. What areas of research do you think deserve further work?

(1) Need for a method for measuring low levels of fibre in ambient air.

(2) Need for a simple selective method of counting asbestos fibres only.

Interviewer: W.D. Brown

Date: November 7, 1980

Q-12

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Saskatchewan Research Council, Physics Division
Address Aerosol Science Laboratory, 30 Campus Drive, Saskatoon, Sask. F7N 0X1
Telephone No. (306) 664-5436
Name of Interviewee Ken Yoshida
Position Scientist

1. Is work being done there on fibre measurement or identification?
   No ___ Terminate interview.
   Yes _x_ Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes _x_ No ___
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite x
      Actinolite
   2.2 Other fibres? Yes _x_ No ___

2.2.1 If yes, what kinds of fibres?

Gypsum, grain dust.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 100 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 33 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 0 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? -- %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

No work-place sampling, except for service work overflow from Department of Labour.

3.1.2.1 What modifications have you made in these procedures?

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes _____ No _____

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ___

If yes, please describe.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No _____

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

AIA Standard method.

3.1.3.1 What modifications have you made in these procedures?

Use 37 mm cassette instead of 25 mm specified in AIA.

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x

If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No _x_.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes _x_ No ____

If yes, what sort of information and from whom?

From U.K. Asbestosis Research Council

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No x

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples 5 - 10 /week

3.1.4.2 Dollar Value: $1000-$1500/week

3.1.4.3 What is the source of funds for this work?

Clients, usually consulting firms.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 2 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

(1) Mass exposure to asbestos in public buildings under different conditions (In Saskatchewan, there is a very low background count).

(2) Work for local insulation contractors in monitoring public buildings.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes x___. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

(1) Trying to identify what standard should be used in ambient air.

(2) Work in particle morphology.

3.2.1.2 On test procedures?

None.

3.2.1.3 On instrumentation?

None.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: 7

3.2.2.2 Dollar Value: $10,000 - $15,000

3.2.2.3 What is the source of funds for this work?

Fee for service - contract research.

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No x_____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No x_____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

Research contract with Saskatoon on asbestos in a hockey arena: sampling and identification of asbestos type.

3.2.5.2 On test procedures?

None.

3.2.5.3 On instrumentation?

None.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

Three years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

Safety standards in ambient air.

3.2.7.1 On sampling?

None

3.2.7.2 On test procedure?

None

3.2.7.3 On instrumentation?

None.

4. Are you measuring or identifying asbestos fibres in water?

No _x_ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

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4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

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4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

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4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

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4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

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Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? __________________________________

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4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

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4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

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4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? __________

4.2.7.2 On test procedure? __________

4.2.7.3 On instrumentation? __________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No x

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes __x__ NO _____

If yes, on what materials and under what circumstances?

Sprayed-on insulation, gypsum wall board and carpeting.

6.1 What procedures do you use?

X-ray diffraction and IR spectrophotometry.

6.1.1 What modifications have you made in these procedures?

In IR, tried using micro-disc pellets, which improved sensitivity.

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Overflow from Saskatchewan Department of Labour comes to us.

8. What areas of research do you think deserve further work?

(1) International standardization of sampling and analytical methods.

(2) Morphological study of asbestos fibres related to physiological effects.

Interviewer: W.D. Brown Date: 24 Nov. 80

Q-13

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Manitoba Labour and Manpower
Address Workplace Safety and Health Branch
Telephone No. (204) 944-3446
Name of Interviewee Dennis Nikkel
Position Industrial Hygienist

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?

Chrysotile	x
Amosite	x
Crocidolite	x
Anthophylite	
Tremolite	
Actinolite	

   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

glass, cellulose, calcite, domlite.

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 25 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 100 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 10 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

NIOSH basically

3.1.2.1 What modifications have you made in these procedures?

We do a modal count on some occasions.

We do not accept the threshold limit values in Manitoba.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes ____ No _x_

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes _x_ No ____

If yes, please describe.

Fibrous aerosol monitor followed by optical methods, i.e. phase contract and occasionally polarized light.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes __x__ No _____

If yes, what sort of information and from whom?

Through the literature.

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes __x__ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

Participating in NIOSH accreditation program for fibre counting.

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

No ambient air.

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____

If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 1½ man-years/year

3.1.4.2 Dollar Value: --

3.1.4.3 What is the source of funds for this work?

Provincial Government

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 4-5 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

To continue in present manner.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

No research.

Yes ____. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: ________

3.2.2.2 Dollar Value: ________

3.2.2.3 What is the source of funds for this work?

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No _____

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

3.2.5.3 On instrumentation?

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No __x__ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

4.1.1.1 What modifications have you made in these procedures?

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: _______

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ________________________

4.2.1.2 On test procedures? ______________________________

4.2.1.3 On instrumentation? ______________________________

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:

4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling? ______________________________

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4.2.5.2 On test procedures? ________________________

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____

4.2.5.3 On instrumentation? ________________________

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4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water? ________________

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4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______________________________

4.2.7.2 On test procedure? ______________________________

4.2.7.3 On instrumentation? ______________________________

5. Have you done any asbestos fibre identification in biological samples?

Yes _____ No __x__

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes x NO ____

If yes, on what materials and under what circumstances?

Bulk: insulation, ceiling and floor tile, pipe wrap, etc.

6.1 What procedures do you use?

X-rary diffraction

EM

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

University of Manitoba (water testing) (see Appendix)

Depts. of Labour in the provinces

Depts of Environment in the provinces (see Appendix)

Federal departments

APPENDIX

NOTES

Water analysis

Consumer Corporate Affairs and Environment

Environmental Control Branch

Work probably being done at University of Manitoba

8. What areas of research do you think deserve further work?

A simple means of identifying fibres on the filter is needed.

Interviewer: W.D. Brown Date: 17/11/80

Q-14

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Doug Brown of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Ontario Ministry of Environment
Address Box 213, Rexdale, Ontario M9W 5L1
Telephone No. 248-3512
Name of Interviewee Dr. Paul Roberts
Position Electron Microscope Unit Supervisor

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes x Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes x No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile x
      Amosite
      Crocidolite
      Anthophylite
      Tremolite
      Actinolite
   2.2 Other fibres? Yes x No ____

2.2.1 If yes, what kinds of fibres?

glass fibres

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes x What percentage of your work is measurement or identification in air as opposed to other media? 10 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 50 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 0 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? ____%.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

No work-place air

3.1.2.1 What modifications have you made in these procedures?

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?

Yes _____ No _____

If yes, please describe.

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3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes____ No ____

If yes, please describe.

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3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes _____ No _____

If yes, what sort of information and from whom?

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No _____.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

- ambient air only.

Sampling on High Vol. air sampler with a nuclepore filter. Filter is ashed, ash suspended in filtered water, and a drop of the suspension is placed on EM grid (ash-drop procedure).

3.1.3.1 What modifications have you made in these procedures?

At least part of the procedure was developed here.

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No x
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No _x_.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes _x_ No ____

If yes, what sort of information and from whom?

From U.S. literature.

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes x No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

Conferences at EM meetings in U.S.

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples 70/year

3.1.4.2 Dollar Value: --

3.1.4.3 What is the source of funds for this work?

Funded by Ministry.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 4 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

To improve the method as much as possible.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes _x_. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

Improvement of technique.

3.2.1.2 On test procedures?

Improvement of technique.

3.2.1.3 On instrumentation?

Broadening of instrument capabilities.

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours 700 man-hours/year

3.2.2.2 Dollar Value: --

3.2.2.3 What is the source of funds for this work?

Funded by Ministry.

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No __x__

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes _____ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

Same as 3.1.3.4 and 3.1.3.5.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

Ongoing work.

3.2.5.2 On test procedures?

Ongoing work.

3.2.5.3 On instrumentation?

Ongoing work.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

Four years.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

3.2.7.1 On sampling?

None.

3.2.7.2 On test procedure?

Method development.

3.2.7.3 On instrumentation?

To make full use of present instrumentation.

4. Are you measuring or identifying asbestos fibres in water?

No _____ Jump to Section 5.

Yes x What percentage of your work is measurement or identification in water as opposed to other media? 90 %.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? 95 %.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

TEM Water is filtered, and filter with particles covered with carbon and placed on EM grid.

4.1.1.1 What modifications have you made in these procedures?

Method developed here as a co-operative effort with other agencies, such as Ontario Research.

4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No __x__

If yes, please describe? ________________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No __x__

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes __x__ No _____

If yes, what sort of information and from whom?

Through conferences in U.S.A.

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes x No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

Through conferences in U.S.A.

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours 6000/year

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

The Ministry.

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

Hope to improve methodology.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No x Please explain.

No research program

- only ongoing improvements in the method.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ____

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours 400/year

4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

The Ministry.

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No x

If yes, please describe.

4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

Through conferences in U.S.A.

4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

Method development.

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

Four years.

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

We hope to improve the method.

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No x____

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes ____ NO x

If yes, on what materials and under what circumstances?

6.1 What procedures do you use?

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

Ontario Research Foundation

Kramer at McMaster

Lakehead University - Mothersill

Heath & Welfare - Pontefract & Lao

Federal EPS in Halifax doing sampling at Bai Vert - Newfoundland

Joe Kozak in Halifax.

8. What areas of research do you think deserve further work?

- Improved monitoring: from sampling through the analysis stage.

Interviewer: W.D. Brown Date: November 28, 1980

Q-1

ASBESTOS FIBRE MEASUREMENT SURVEY

My name is Bob Bruce of the Ontario Research Foundation. We are doing a cross-Canada survey for Energy, Mines and Resources Canada to determine what work is being done on the measurement of inorganic fibres, particularly asbestos, in air and in water. This is needed for Energy, Mines and Resources own information and for the international technical co-operation program operated through the European Economic Community. Thus the information obtained in the survey will become public property.

Are you willing to spend a few minutes answering questions on your work in the area?

Name of Company Ontario Ministry of Labour, Occupational Health Branch
Address ____
Telephone No. 965-3150
Name of Interviewee Mr. G. Rajhans, B. Khati
Position ____

1. Is work being done there on fibre measurement or identification?
   No ____ Terminate interview.
   Yes X Continue with 2.

2. What types of fibres are you measuring or identifying?
   2.1 Asbestos? Yes X No ____
   2.1.1 If yes, what kinds of asbestos?
      Chrysotile X
      Amosite X
      Crocidolite X
      Anthophylite
      Tremolite X
      Actinolite
   2.2 Other fibres? Yes X No ____

2.2.1 If yes, what kinds of fibres?

Rock wool

Mineral wool

Fibre glass

(In this questionnaire we refer specifically to asbestos fibres, as our major area of interest. However, we would also like to hear about any other inorganic fibres you may be working with).

3. Are you measuring or identifying asbestos fibres in air?

No ____ Jump to Section 4.

Yes ___ What percentage of your work is measurement or identification in air as opposed to other media? 100 %.

3.1 What percentage of your work on air measurements is service work as opposed to research? 80 %

3.1.1 What percentage of your service work is on air from the work place as opposed to ambient air? 100 %

3.1.1.1 What percentage of your air measurements from the work place is personal as opposed to static? 90 %.

3.1.2. What general procedures do you use in your service work on air from the work place? (Include sampling, test procedure and instrumentation).

Method published by Ministry of Labour (Ontario) in September 1980. (Similar to NIOSH procedure.)

3.1.2.1 What modifications have you made in these procedures?

None.

3.1.2.2 Have you developed any new instruments in your laboratory for use on air from the work place?
Yes ____ No _X_

If yes, please describe.

3.1.2.3 Have you imported any new instruments or attachments for use on air from the work place? Yes _X_ No ____

If yes, please describe.

Fibrous aerosol monitor.

3.1.2.4 Are you obtaining information on sampling, test procedure, or instrumentation from outside Canada?

Yes __X__ No _____

If yes, what sort of information and from whom?

1. NIOSH
2. British Occupational Hygiene Soc.
3. AIA

3.1.2.5 Are you participating in an information exchange with persons outside Canada? Yes _____ No __X__.

If yes, what sort of information are you exchanging, with whom, and on what basis? (through an organization (name?), personal contact, etc.).

3.1.3 What general procedures are you using on ambient air? (include sampling, test procedure and instrumentation).

3.1.3.1 What modifications have you made in these procedures?

3.1.3.2 Have you developed any new instruments or attachments for ambient air in your laboratory? Yes ____ No ____
If yes, please describe.

3.1.3.3 Have you imported any new instruments or attachments for ambient air? Yes ____ No ____.

If yes, please describe.

3.1.3.4 Are you obtaining information on sampling, test procedure or instrumentation for ambient air from outside Canada? Yes ____ No ____

If yes, what sort of information and from whom?

3.1.3.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurements or identification in ambient air?

Yes ____ No ____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name?), personal contact, etc.).

3.1.4 How much service work is actually done there on asbestos fibre in air?

3.1.4.1 Samples/Day: Approx. 40/day

3.1.4.2 Dollar Value: ____________

3.1.4.3 What is the source of funds for this work?

Internal funding.

3.1.5 How long has your laboratory been doing service work in asbestos fibre measurement or identification in air? 13 years.

3.1.6 What future plans do you have for the service work in asbestos fibre measurement and identification in air? (include possible changes in method and equipment).

Presently under review.

3.2 Presumably the proportion of your activity in fibre measurement and identification which is not service work, is research. Is this a correct assumption?

No _____. Please explain.

Yes _X_. Continue through 3.2.1.

3.2.1 What research projects are underway on asbestos fibre measurement or identification in air?

3.2.1.1 On sampling?

Informal determination of the statistical variation for general occupancy buildings using long term sampling.

3.2.1.2 On test procedures?

3.2.1.3 On instrumentation?

3.2.2 How much research work is actually done there on asbestos fibre measurement or identification in air?

3.2.2.1 Man-hours/week: Approx. 5 hrs./week

3.2.2.2 Dollar Value:

3.2.2.3 What is the source of funds for this work?

Internal

3.2.3 Have you imported any specialty instruments or attachments for your research work on asbestos fibre in air?

Yes _____ No __X__

If yes, please describe.

3.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in air with persons outside Canada?

Yes __X__ No _____

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

As in 3.1.2.4.

3.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in air?

3.2.5.1 On sampling?

3.2.5.2 On test procedures?

- Statistical analysis of asbestos fibre counts.
- Review of asbestos exposures in Ontario, to determine whether fibre counts can be used a tool to measure dust control.
- Correlation between fibre counts and fibrous aerosol monitor readings.

3.2.5.3 On instrumentation?

As above.

3.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in air?

Including both labs, 8 years.

Lab 1: XRD

Electron microscope

Lab 2: Phase contrast.

3.2.7 What future research work is planned on asbestos fibre measurement or identification in air?

Determination of range of asbestos concentrations expected in different types of industries.

3.2.7.1 On sampling?

3.2.7.2 On test procedure?

3.2.7.3 On instrumentation?

4. Are you measuring or identifying asbestos fibres in water?

No _____ Jump to Section 5.

Yes _____ What percentage of your work is measurement or identification in water as opposed to other media? _____%.

4.1 What percentage of your work on asbestos fibre measurement or identification in water is service work as opposed to research? _____%.

4.1.1 What general procedures do you use for asbestos fibre measurements or identification in water? (include sampling, test procedures and instrumentation).

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4.1.1.1 What modifications have you made in these procedures?

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4.1.1.2 Have you developed any new instruments or attachments in your laboratory for use in water measurement or identification? Yes ____ No ____

If yes, please describe? ____________________

4.1.1.3 Have you imported any new instruments or attachments for use in water measurement or identification?

Yes ____ No ____

If yes, please describe?

4.1.1.4 Are you obtaining information on sampling, test procedure or instrumentation for measurement or identification of asbestos fibre in water from outside Canada?

Yes ____ No ____

If yes, what sort of information and from whom?

4.1.1.4 (Continued) If yes, what sort of information and from whom?

4.1.1.5 Are you participating in an information exchange with persons outside Canada on asbestos fibre measurement or identification in water?

Yes____ No _____

If yes, what sort of information are you exchanging, with whom and on what basis? (through an organization (name), personal contact, etc.).

4.1.2 How much service work is actually done there on the measurement and identification of asbestos fibres in water?

4.1.2.1 Man-hours/Week: ________

4.1.2.2 Dollar Value:

4.1.2.3 What is the source of funds for this work?

4.1.4 What are your future plans for asbestos fibre measurement and identification in water? (include possible changes in method and equipment.

4.2 Presumably, that proportion of your activity in asbestos fibre measurements or identification which is not service work, is research. Is this a correct assumption?

No _____ Please explain.

Yes ____ Continue through 4.2.1.

4.2.1 What research projects are underway on asbestos fibre measurement or identification in water?

4.2.1.1 On Sampling? ______________________________

4.2.1.2 On test procedures?

4.2.1.3 On instrumentation?

4.2.2 How much research is actually done there on the measurement or identification of asbestos fibres in water?

4.2.2.1 Man-hours/week:
4.2.2.2 Dollar Value:

4.2.2.3 What is the source of funds for this work?

4.2.3 Have you imported any new instruments or attachments for your research work on asbestos fibre in water?

Yes ______ No ______

If yes, please describe.

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4.2.4 Are you obtaining information or participating in an information exchange on research into the measurement or identification of asbestos fibres in water with persons outside Canada?

Yes ______ No ______

If yes, what sort of information are you obtaining or exchanging, with whom and on what basis? (through an organization (name?) personal contact, etc.).

____

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4.2.5 What past research work has your laboratory done on asbestos fibre measurement or identification in water?

4.2.5.1 On sampling?

4.2.5.2 On test procedures?

4.2.5.3 On instrumentation?

4.2.6 How long has your laboratory been doing research work on asbestos fibre measurement or identification in water?

4.2.7 What future research work is planned on asbestos fibre measurement or identification in water?

4.2.7.1 On sampling? ______

4.2.7.2 On test procedure? ______

4.2.7.3 On instrumentation? ______

5. Have you done any asbestos fibre identification in biological samples?

Yes ____ No _X_

If yes, on what samples and under what circumstances?

5.1 What procedures are you using on biological samples?

5.1.1 What modifications have you made in these procedures?

6. Have you done any asbestos fibre measurement or identification in media other than air, water or biological specimens?

Yes X NO

If yes, on what materials and under what circumstances?

Bulk materials.

6.1 What procedures do you use?

- Polarized light microscopy
- XRD

6.1.1 What modifications have you made in these procedures?

7. Who else do you know in Canada is working on inorganic fibre measurement or identification?

1. Dr. John Sullivan - University of Western Ontario
(Sampling) Occupational Health & Safety Resource Centre
London, Ont. N6A 5B9.
519-679-3305

2. Dr. Muir - McMaster.

8. What areas of research do you think deserve further work?

1. Automatic counting + identification instruments.

Interviewer: R. B. Bruce

Date: 27/11/80